Phoenix-Goodyear Airport North

Boundaries:

The Phoenix-Goodyear Airport (PGA) Superfund site is located approximately 17 miles due west of Phoenix in Goodyear, Arizona. The site is divided into a northern portion (PGA-North) and a southern portion (PGA-South). Contamination from these two areas is not contiguous. The physical boundaries of the PGA North site are defined by the groundwater contamination plume which is generally bounded by Thomas Road to the north, Litchfield Road to the east, the Unidynamics property on the south, and Bullard Avenue to the west. The site consists of the Unidynamics property and any groundwater contamination originating from this property.

Site History:

- Unidynamics operated a research, design and manufacturing facility for ordnance and related equipment from 1963 to 1993. Several different chemicals, including solvents such as trichloroethylene (TCE), acetone and methyl-ethyl-ketone (MEK), were used in manufacturing devices and were reportedly disposed of in dry wells on site.

- The Arizona Department of Health Services discovered the groundwater contamination in 1981. EPA added the PGA site to the National Priorities List (NPL) in September 1983.

- In 1984, EPA began a remedial investigation of the Litchfield Airport Area (presently known as the Phoenix-Goodyear Airport) to characterize the site, discover the extent of the contamination, and identify possible sources. From this study, the site was divided at Yuma Road into a north and a south portion. The northern extent of the groundwater plume emanates from the Unidynamics facility.

- In September 1990, the EPA issued an Administrative Order directing Unidynamics to proceed with soil and groundwater remediation as described in the EPA's 1989 Record of Decision (ROD). The groundwater portion of the remediation program was undertaken in three phases. The initial (Phase I) groundwater treatment system began operation in November 1994 and addressed the area of highest contaminant concentration.

- Phase II of the groundwater remedy was enacted and placed into operation in November 1996. Phases I and II consisted of extracting the groundwater, removal of the contaminants by air stripping with emissions control, and reinjecting the treated water into the same aquifer upgradient of the plume.

- Phase III was implemented in October 1998 with the installation of a liquid-phase carbon adsorption system. The carbon system is designed to capture the northern extent of the TCE plume, which extends about 2.5 miles from the Unidynamics property.

- For treatment of soil contamination, the soil vapor extraction (SVE) system began operation in 1994 and included a thermal oxidation unit equipped with an exhaust

scrubber to reduce emissions. In 1998, the SVE system was shut down for reevaluation and not restarted due to community concerns about potential dioxin emissions. Re-starting the SVE system using carbon treatment, which does not release emissions, is currently being negotiated with the responsible party, Crane Co.

- The first groundwater monitoring plan was developed in 1991 and implemented in 1992. Since that time, groundwater monitoring has been ongoing with informal and formal adjustments creating a substantial body of data that document the TCE concentration trends. Currently there are 91 monitoring points used in regular groundwater monitoring.

- Perchlorate contamination was discovered in 1998, and is included in the groundwater monitoring.

- TCE and perchlorate contamination was discovered in the Park Shadows Country Homes irrigation well in March 1999. It was determined that a mechanical malfunction at the TCE air stripper treatment system caused the spread of the contamination by allowing untreated water to bypass the treatment and be re-injected into the shallow aquifer. The malfunction in the treatment system was repaired in December 1999, and the irrigation well properly abandoned September 2002.

- Groundwater monitoring on a regular basis continues at this site. Perchlorate contamination initially discovered in the Park Shadows Country Homes irrigation well in March 1999 has spread into the drinking water well. The residents of Park Shadows were taken off the well and hooked to municipal supply in December 3, 2002. The well is being monitored on a semi-monthly basis.

Site Status:

- In November 2001, TCE and perchlorate contamination was discovered in the Subunit C site monitoring well MW-20, where previously there had been no detection of contamination. Two sentinel wells were installed in February 2002 to monitor any contaminant migration from the vicinity of MW-20 toward the City of Goodyear drinking water supply wells. In May 2003, the City of Goodyear well COG-2 was taken out of service and is no longer used for drinking water.

- The Phase II groundwater investigation has yielded valuable data; however, additional groundwater investigation is needed to decide if the existing groundwater extraction system should be expanded or redesigned to halt further migration of contaminants from the upper aquifer to the deeper aquifer.

- Since 2002, a perchlorate treatment pilot study has been conducted by Crane Co., using the City of Goodyear's Waste Water Treatment Plant for treating the perchlorate contaminated groundwater. Presently, the pilot study is in its final stages and a final report from Crane Co. is expected with a couple of months.

- Crane Co. has completed review of the Soil Vapor Extraction System Workplan for the Former Unidynamics Phoenix, Inc. Facility issued by EPA. Crane Co. reports they anticipate that correspondence outlining all comments relative to the re-startup and operation of the Soil Vapor Extraction system will be submitted in late January 2004.

- EPA is conducting subsurface soil gas sampling at the site to determine what levels of contaminants are present in the soils at and near the Unidynamics facility. Some of the samples collected in 2002 and 2003 indicated significant levels of soil contamination at and near three buildings on Litchfield Road, north of the site. Indoor air sampling was conducted to ensure that no contamination is entering the buildings; findings completed in December 2003 appear to indicate that there is no cause for concern about indoor air quality affected by soil contamination from the site.

Site Hydrogeology:

- The site lies within the Basin and Range physiographic province, consisting of alluvial basins interspersed by mountain ranges. The alluvial deposits of the western Salt River Valley consist of the Upper Alluvial Unit (UAU), the Middle Fine-grained Unit, or Middle Alluvial Unit (MAU) and the Lower Conglomerate Unit, or Lower Alluvial Unit (LAU).

- In the vicinity of the PGA-North site, the UAU is approximately 350 feet thick and is further divided into three subunits: Subunit A, Subunit B, and Subunit C. Subunits A, B, and C are hydraulically connected Subunit A is composed of silty sand and gravel, and extends to depths of 120 to 160 feet below ground surface (bgs). The lower half of Subunit A is saturated and is considered an aquifer. This aquifer contains the bulk of the groundwater contamination beneath this site. Subunit B is also comprised of fluvial sediments consisting of sand, sandy-silt, and clay, possibly representing ancient stream deposits. Locally this horizon was once thought to act as an aquitard, which impedes the vertical flow of groundwater from Subunit A to C; however, recent data collected suggests this concept is incorrect. Subunit B generally occurs at depths between 120 and 240 feet bgs. Subunit C consists of silt, sand, and gravel and occurs typically from 240 to 350 feet bgs. Groundwater contained within Subunit C is pumped for use as drinking water and for agricultural purposes.

- Groundwater flow direction within both aquifers is largely influenced by pumping as there are multiple domestic, municipal, irrigation, and remediation (extraction and injection) wells in the vicinity of the site. A groundwater divide occurs within Subunit A in the vicinity of Yuma Road, separating the PGA-North from the PGA-South sites. Subunit A within PGA-North typically flows to the north-northwest away from the site while groundwater within Subunit C, based on the current knowledge, is relatively flat. Depth to groundwater within Subunit A is generally 70 to 100 feet bgs and approximately at 360 feet bgs within Subunit C.

Contaminants:

The current contaminants of concern at the site include chlorinated solvents, mainly TCE, and perchlorate. TCE is present in the subsurface soils located within the Unidynamics property, as well as in the groundwater. Perchlorate was discovered in the groundwater in August 1998.

Acetone and MEK are still found at trace levels in the groundwater; however, it is believed that the soil vapor extraction system, while in operation, effectively reduced the levels. Contaminants of concern at the site may change as new data become available.

Public Health Impact:

Potential health risks may exist for individuals who ingest the contaminated groundwater. There are no known drinking water supply wells on the site. The City of Goodyear and Litchfield Park Service Company (LPSCO) regularly monitor their drinking water supply wells, as required by law.

Community Involvement Activities

A community advisory group (CAG) was formed in January 2001 in conjunction with the PGA South and Western Avenue WQARF sites and meets on a regular basis. These meetings are open to the public. The CAG meeting agendas and minutes can be viewed at http://www.adeq.az.us/environ/waste/sps/reg.html.

A fact sheet was mailed to the site mailing list in December 2002.

Information Repository:

Interested parties can review site information at the information repository located at the Avondale Public Library located at 328 West Western Avenue in Avondale, (623) 932-9415. Site files are also located at the ADEQ main office located at 1110 West Washington Street, Phoenix. Site information at ADEQ is available for review Monday through Friday from 8 a.m. to 5 p.m. To arrange for a time to review the public site file, please call the ADEQ Records Center (602) 771-4378 or (800) 234-5677 (Arizona toll free).

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*In Arizona, but outside the Phoenix area, call toll-free (800) 234-5677.
**Call EPA's toll-free message line at (800) 231-3075.